

WE CLAIM:

1. An electron gun for use in a cathode ray tube (CRT) for producing a video image on a display screen, said electron gun comprising:  
a cathode for providing energetic electrons;  
5 a beam forming region (BFR) aligned with said cathode and disposed intermediate said cathode and the display screen for receiving and forming said energetic electrons into a narrow beam, said BFR including plural spaced first charged grids each having one or more first aligned apertures, wherein said electrons are directed through said first aligned apertures and said electron beam increases in cross section in proceeding from said BFR toward the display screen; and  
10 an electrostatic lens disposed intermediate said BFR and the display screen and including plural spaced second grids charged by a respective focus voltage, each of said second grids having one or more second aligned apertures through which said electron beam is directed for focusing said electron beam on the display screen, wherein said second aligned apertures decrease in size in proceeding in a direction from the display screen toward said BFR for increasing focusing sensitivity of said electrostatic lens on the electron beam while decreasing said focus voltages.

- 15 2. The electron gun of claim 1 wherein the CRT is a color CRT having three cathodes for providing three groups of energetic electrons, and wherein each of said first charged grids includes three apertures each adapted to receive and form a respective group of energetic electrons into an elongated, narrow beam.

3. The electron gun of claim 2 wherein the three apertures in each of said first charged grids are arranged in an inline array.

4. The electron gun of claim 1 wherein said BFR includes a first G1 control grid, a second G2 screen grid, and a bottom portion of a third G3 grid.

5. The electron gun of claim 4 wherein said electrostatic lens includes a top portion of said third G3 grid and plural spaced aligned focus grids disposed intermediate said third G3 grid and the display screen.

6. The electron gun of claim 2 wherein said electrostatic lens includes a dynamic quadrupole lens for compensating for astigmatism of the electron beams on the display screen as the electron beams are displaced over the display screen in a raster-like manner.

7. The electron gun of claim 6 wherein said dynamic quadrupole lens includes two or three charged elements.

8. The electron gun of claim 2 wherein said electrostatic lens includes plural dynamic quadrupole lenses disposed in a spaced manner between said BFR and the display screen for compensating for astigmatism of the electron beams on the display screen as the electron beams are displaced over the display screen in a raster-like manner.

9. The electron gun of claim 8 wherein each dynamic quadrupole lens includes two or three charged elements.

10. The electron gun of claim 1 wherein said electrostatic lens comprises a dynamic focus lens disposed adjacent said BFR and a main focus lens disposed intermediate said dynamic focus lens and the display screen.

11. The electron gun of claim 10 wherein said second aligned apertures are disposed in second grids in said dynamic focus lens.

12. The electron gun of claim 1 wherein said electrostatic lens includes a dynamic quadrupole and said second grids include a third grid having a fixed focus voltage and fourth grid having a dynamic focus voltage.

13. The electron gun of claim 12 wherein the CRT includes plural electron beams for producing a color video image on the display screen, and wherein said third grid includes plural spaced apertures for passing a respective electron beam and said fourth grid includes a single common aperture for passing said plural electron beams, said single common aperture having plural spaced enlarged portions each aligned with a respective aperture in said third grid and adapted for passing a respective electron beam, and wherein each enlarged portion is larger than an aligned beam passing aperture in said third grid, and wherein said fourth grid is disposed intermediate said third grid and the display screen.

14. The electron gun of claim 12 wherein the CRT includes plural electron beams for producing a color video image on the display screen, and wherein said third grid includes plural spaced apertures for passing a respective electron beam and said fourth grid includes a common aperture for passing said plural electron beams,  
5 said single common aperture having plural spaced enlarged portions each aligned with a respective aperture in said third grid and adapted for passing a respective electron beam, and wherein each enlarged portion is smaller than an aligned beam passing aperture in said third grid, and wherein said third grid is disposed intermediate said fourth grid and the display screen.

15. An electron gun for use in a cathode ray tube (CRT) for producing a video image on a display screen, said electron gun comprising:  
a cathode for providing energetic electrons;  
a beam forming region (BFR) aligned with said cathode and disposed intermediate said cathode and the display screen for receiving and forming said energetic electrons into a narrow beam, said BFR including plural spaced first charged grids each having one or more first aligned apertures, wherein said electrons are directed through said first aligned apertures and said electron beam increases in cross section in proceeding from said BFR toward the display screen; and  
10 an electrostatic lens disposed intermediate said BFR and the display screen and including plural spaced second grids charged by a respective focus voltage, each of said second grids having one or more second aligned apertures through which said

electron beam is directed for focusing said electron beam on the display screen, said  
electrostatic lens including first and second dynamic quadrupoles each having a  
15 respective third grid and a respective fourth grid, wherein each of said third grids  
includes plural spaced apertures for passing a respective electron beam and each of  
said fourth grids includes a single common aperture having plural spaced aligned  
portions each adapted for passing a respective electron beam, and wherein each  
spaced aperture in each of said third grids is larger than an aligned enlarged portion  
20 of the single common aperture in an associated fourth grid when said fourth grid is  
disposed intermediate said cathode and its associated third grid, and is smaller than  
an aligned enlarged portion of the single common aperture in an associated fourth  
grid when said third grid is disposed intermediate said cathode and its associated  
fourth grid.

2025 RELEASE UNDER E.O. 14176